

## REMARKS

By this Amendment, Applicant cancels claims 15, 17, 22, and 24, without prejudice or disclaimer of the subject matter thereof, and amends claims 11 and 18 to more appropriately define the present invention. Claims 11-14, 16, 18-21, 23, 25, and 26 remain pending.

In the Final Office Action ("FOA"), the Examiner objected to the drawings under 37 C.F.R. § 1.83(a); rejected claim 11 under 35 U.S.C. § 112, second paragraph<sup>1</sup>; rejected claims 11, 17, 18, and 24-26 under 35 U.S.C. § 103(a) as unpatentable over Nito et al., U.S. Patent No. 5,659,411 ("Nito") in view of Jono et al., U.S. Patent No. 5,078,477 ("Jono"); and rejected claims 12-16 and 19-23 under 35 U.S.C. § 103(a) as unpatentable over Nito in view of Jono and further in view of Tanaka et al., U.S. Patent No. 5,459,481 ("Tanaka"). In response, Applicant traverses the objection and rejections for the reasons set forth below.

### **I. Response to Objection**

With regard to the drawings, the Examiner alleged that the claim element "the driving circuit comprises switches" is not illustrated in the drawings. (FOA at p. 2). In response, Applicant respectfully points out to the Examiner that an example of a driving circuit comprising switches is illustrated in the embodiment of Fig. 11. More particularly, Fig. 11 illustrates a power supply circuit comprising switches SW1 and SW2 for switching between the driving voltage and layer structure controlling waveform. Thus, contrary to the Examiner's allegation, this claim element is illustrated in the drawings. Applicant requests that the Examiner withdraw the objection to the drawings.

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<sup>1</sup> The Examiner did not specify which paragraph of section 112 that claim 11 was rejected under. However, Applicant assumes that the Examiner's rejection is under section 112, second paragraph, because the Examiner alleged lack of antecedent basis for a claim element which normally falls under this paragraph. Nonetheless, Applicant requests that the Examiner clarify this rejection in the next Office correspondence.

## **II. Response to Rejection under 35 U.S.C. § 112**

With regard to claim 11, the Examiner alleged that the term “the driving circuit” recited at line 9 of claim 11 lacks antecedent basis. (FOA at p. 2). In response, Applicant respectfully submits that antecedent basis for this term is found at lines 2-3 of claim 11. Specifically, claim 11, at lines 1-3, recites “an antiferroelectric liquid crystal between a pair of substrates, which comprises a **driving circuit**.” (emphasis added). Thus, contrary to the Examiner’s allegations, the term “the driving circuit” recited at line 9 has sufficient antecedent basis. Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. § 112, second paragraph, should be withdrawn.

## **III. Response to Rejections under 35 U.S.C. § 103(a)**

The Examiner alleged that claims 11, 17, 18, and 24-26 are unpatentable over Nito in view of Jono and that claims 12-16 and 19-23 are unpatentable over Nito in view of Jono and further in view of Tanaka. With regard to claims 15, 17, 22, and 24, Applicant cancels these claims, without prejudice or disclaimer of the subject matter thereof. Thus, the rejection of these claims is rendered moot.

In response to the rejections of claims 11-14, 16, 18-21, 23, 25, and 26, Applicant submits that a *prima facie* case of obviousness has not been established for these claims.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.03, ed. 8, rev. 1 (Feb. 2003) (quoting *In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970)). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

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ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. M.P.E.P. § 2143 at 2100-122 to 127.

With regard to the rejection of claims 11, 18, 25, and 26 over Nito in view of Jono, a *prima facie* case of obviousness has not been established because none of the three basic criteria have been met.

With regard to the rejection of claims 12-14, 16, 19-21, and 23 over Nito in view of Jono and further in view of Tanaka, a *prima facie* case of obviousness has not been established because all three basic criteria have not been met..

Applicant will now address each rejection separately in further detail.

**A. Nito in view of Jono (claims 11, 17, 18, and 24-26)**

Claim 11 is directed to an antiferroelectric liquid crystal display comprising a combination of elements including, *inter alia*, “a driving circuit adapted to output ... a layer structure controlling voltage waveform ... which changes a layer structure of the antiferroelectric liquid crystal from a chevron structure to a bookshelf structure ... wherein the driving circuit comprises switches which switch the output from the display driving voltage waveform to the layer structure controlling voltage waveform for an optional length of time, and the switches are switched at predetermined intervals of time, or are switched in accordance with information from a temperature sensor provided with the liquid crystal panel.”

Claim 18 is directed to a method of driving an antiferroelectric liquid crystal display comprising a combination of elements including, *inter alia*, “[a] display driving voltage waveform [which] is switched for an optional length of time to a layer structure controlling voltage waveform ... which changes a layer structure of the antiferroelectric liquid crystal from a chevron structure to a bookshelf structure, wherein the display driving waveform is switched to the layer structure controlling voltage waveform at predetermined intervals of time, or is

switched in accordance with information from a temperature sensor provided with the liquid crystal panel.”

In the rejection of claims 11, 17, 18, and 24-26, the Examiner alleged that Nito teaches an antiferroelectric liquid crystal panel including a driving circuit adapted to output a layer structure controlling voltage waveform. (FOA at p. 3). Then, the Examiner admitted that Nito fails to teach that the layer of the antiferroelectric liquid crystal display changes from a chevron structure to a bookshelf structure. (FOA at p. 3). The Examiner, however, alleged that Jono discloses changing the liquid crystal structure from a chevron structure to bookshelf structure. (FOA at p. 3). Applicant submits that the Examiner has misconstrued the disclosure of Nito and Jono.

More particularly, Nito fails to disclose a layer structure controlling voltage waveform. Nito only discloses the effect that the cone angle of liquid crystal molecules changes with temperature, not the layer spacing. *See Nito*, col. 11, line 41. Layer spacing relates to the distance between cones of the liquid crystal molecules, whereas cone angle relates to the rotation angle of liquid crystal molecules. Nito discloses changing the arrangement of the optical axis of the liquid crystal director in order to correct the change in the cone angle of the liquid crystal molecules. However, since the cone angle is not the same as the layer spacing, if the cone angle changes, the layer spacing does not always change. Hence, the layer spacing is not changed by Nito and the various waveforms illustrated by Nito (i.e., Figs. 70A-70E) are merely conventional driving voltage waveforms. Thus, Nito fails to teach or suggest at least a driving voltage waveform is switched for an optional length of time to a layer structure controlling voltage waveform and wherein the display driving waveform is switched to the layer structure controlling voltage waveform at predetermined intervals of time, or is switched in accordance

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with information from a temperature sensor provided with the liquid crystal panel, as recited in claim 18.

Moreover, since Nito fails to teach or suggest a layer structure controlling voltage waveform, Nito clearly fails to teach or suggest at least a driving circuit adapted to output a layer controlling voltage waveform and wherein the driving circuit comprises switches which switch the output from the display driving voltage waveform to the layer structure controlling voltage waveform for an optional length of time, and the switches are switched at predetermined intervals of time, or are switched in accordance with information from a temperature sensor provided with the liquid crystal panel, as recited in claim 11. Thus, the Examiner's allegation that Nito discloses a driving circuit adapted to output a layer structure controlling waveform is incorrect.

Furthermore, Jono also fails to teach or suggest a driving circuit adapted to output a layer controlling voltage. Jono discloses an antiferroelectric liquid crystal display in which the layer structure is changed from a chevron structure to a bookshelf structure and discloses that the structure is changed by an applied voltage waveform. Jono, col. 4, lines 16-40. However, Jono fails to teach or suggest that the voltage waveform is output from a driving circuit. Thus, Jono fails to teach or suggest at least a driving circuit comprises switches which switch the output from the display driving voltage waveform to the layer structure controlling voltage waveform for an optional length of time, and the switches are switched at predetermined intervals of time, or are switched in accordance with information from a temperature sensor provided with the liquid crystal panel, as recited in claim 11. Furthermore, Jono fails to teach or suggest at least a driving voltage waveform is switched for an optional length of time to a layer structure controlling voltage waveform and wherein the display driving waveform is switched to the layer

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structure controlling voltage waveform at predetermined intervals of time, or is switched in accordance with information from a temperature sensor provided with the liquid crystal panel, as recited in claim 18.

Thus, the Examiner has failed to establish a *prima facie* case of obviousness for claims 11 and 18 because Nito and Jono, taken alone or in combination, fail to teach all the claim elements. For at least this reason, claims 11 and 18 are allowable.

Moreover, there is no suggestion or motivation to modify Nito and Jono to produce Applicant's claimed invention. The Examiner does not demonstrate the presence of any suggestion or motivation to combine Nito and Jono, and, since Nito concerns cone angle and not layer spacing, there is no motivation to combine Nito and Jono. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01 at p. 2100-124, (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)) (emphasis in original).

Since Nito and Jono, taken alone or in combination, do not teach or suggest all the elements of Applicant's claimed invention, and there can be no suggestion or motivation **in the cited references** to modify them, Applicant submits that the cited references do not suggest the desirability of their modification to produce Applicant's present invention. Similarly, without any motivation to modify Nito and Jono, there can be no reasonable expectation of success from modifying these references to somehow produce Applicant's present invention.

Thus, the Examiner has failed to establish a *prima facie* case of obviousness for claims 12-16 and 19-23. For at least this reason, claims 12-16 and 19-23 are allowable.

Claims 25 and 26 are allowable at least due to their dependence from allowable claim 11 and claim 18, respectively. "If an independent claim is nonobvious under 35 U.S.C. 103, then

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any claim depending therefrom is nonobvious.” M.P.E.P. § 2143.03 at 2100-126, (citing *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988)).

**B. Nito in view of Jono and further in view of Tanaka (claims 12-16 and 19-23)**

Claims 12-14, 16, 19-21, and 23 depend either from claim 11 or claim 18. In the rejection of claims 12-14, 16, 19-21, and 23, the Examiner admitted that Nito does not disclose a temperature sensor. (FOA at p. 4). The Examiner, however, alleged that “one skill[ed] in the art would have recognized that the device of Nito has to have a temperature sensor in order to measure the temperature.” (FOA at p. 4). The Examiner also admitted that Nito fails to disclose that the length of time of the voltage waveform is equal to one frame excluding a rest period and a control circuit to output a scanning signal. (FOA at p. 4). However, the Examiner alleged that Tanaka teaches the length of time of the voltage waveform, but also admitted that Tanaka does not explicitly disclose a control circuit. (FOA at p. 4). The Examiner alleged that “[i]t would [be] obvious that ... Tanaka’s system includes a control circuit in order to provide the scanning electrodes a scanning signal.” (FOA at p. 4).

As mentioned above, Nito and Jono fail to teach or suggest at least a driving circuit comprising switches which switch the output from the display driving voltage waveform to the layer structure controlling voltage waveform for an optional length of time, and the switches are switched at predetermined intervals of time, or are switched in accordance with information from a temperature sensor provided with the liquid crystal panel, as recited in claim 11, and a driving voltage waveform is switched for an optional length of time to a layer structure controlling voltage waveform and wherein the display driving waveform is switched to the layer structure controlling voltage waveform at predetermined intervals of time, or is switched in accordance with information from a temperature sensor provided with the liquid crystal panel, as recited in claim 18.

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Likewise, Tanaka fails to disclose a layer structure controlling voltage waveform.

Tanaka merely discloses a conventional scanning waveform in which the voltage is set to peak levels during a selection period and then set at a lower voltage during a non-selection period.

Tanaka, Fig. 2. Therefore, Tanaka also fails to teach or suggest at least these claim elements.

Thus, the Examiner has failed to establish a *prima facie* case of obviousness for claims 12-14, 16, 19-21, and 23 because Nito, Jono, and Tanaka fail to teach all the claim elements. For at least this reason, claims 12-14, 16, 19-21, and 23 are allowable.

Furthermore, Applicant is unclear how to interpret the Examiner's allegation that "one skill[ed] in the art would have recognized that the device of Nito has to have a temperature sensor in order to measure the temperature." It appears that the Examiner may be attempting to take "Official Notice" to allege that certain elements of Applicant's claimed invention are "well known" in the art. Since the record is unclear, Applicant requests that the Examiner clarify the arguments presented in the rejection by further explaining this statement.

To the extent that the Examiner is, in fact, relying on taking "Official Notice" in stating these conclusions, the Examiner is respectfully reminded of the provisions of M.P.E.P. § 2144.03, the procedures set forth in the Memorandum by Stephen G. Kunin, Deputy Commissioner for Patent Examination Policy dated February 21, 2002, and the precedents provided in *Dickinson v. Zurko*, 527 U.S. 150, 50 U.S.P.Q.2d 1930 (1999) and *In re Ahlert*, 424 F.2d, 1088, 1091, 165 U.S.P.Q. 418, 420 (CCPA 1970). An "Official Notice" rejection is improper unless the facts asserted are well-known or common knowledge in the art, and capable of instant and unquestionable demonstration as being well-known. Further, any facts asserted as well-known should serve only to "fill in the gaps" in an insubstantial manner. It is never

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appropriate to rely solely on "common knowledge" without evidentiary support in the record as the principal evidence upon which a rejection is based.

Applicant submits, in view of these provisions, that a temperature sensor, as set forth in the claims, is not unquestionably well-known, and the Examiner has failed to demonstrate such. Further, considering the assertions on the record, it appears the Examiner is attempting to improperly rely on "Official Notice" as the basis upon which to justify the rejection. Accordingly, Applicant traverses the "Official Notice" taken and requests that the Examiner withdraw the rejection and timely allow the pending claims. However, if the Examiner maintains his position that the pending claims are not allowable, Applicant requests that the Examiner cite a competent prior art reference in substantiation of these unsupported conclusions and set forth a proper rejection based on factual evidentiary support that is made of record.

Moreover, there is no suggestion or motivation to modify Nito, Jono, and Tanaka to produce Applicant's claimed invention. Even if the Examiner's allegations that "[i]t would [be] obvious that ... Tanaka's system includes a control circuit in order to provide the scanning electrodes a scanning signal," were true (which Applicants dispute), this still does not establish that there would have been the requisite suggestion or motivation to modify Tanaka to produce Applicant's claimed invention. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01, p. 2100-124.

Since Nito, Jono, and Tanaka, taken alone or in combination, do not teach or suggest all the recitations of Applicant's claimed invention, and there can be no suggestion or motivation **in the cited references** to modify them, Applicant submits that the cited references do not suggest the desirability of their modification to produce Applicant's present invention. Similarly,

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without any motivation to modify Nito, Jono, and Tanaka, there can be no reasonable expectation of success from modifying these references to somehow produce Applicant's present invention.

Thus, the Examiner has failed to establish a *prima facie* case of obviousness for claims 12-16 and 19-23. For at least this reason, claims 12-16 and 19-23 are allowable.

#### IV. Conclusion

In view of the foregoing, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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